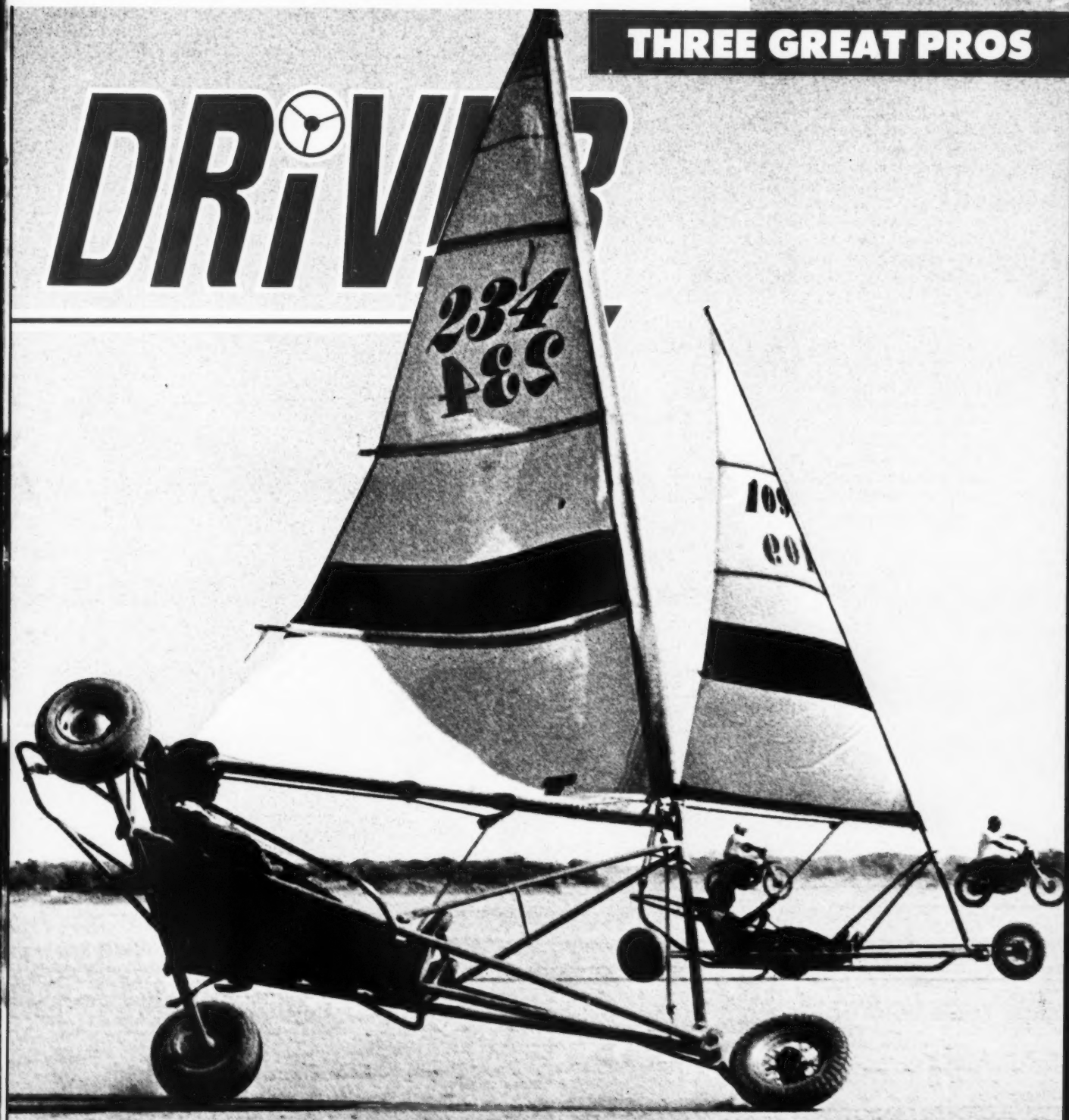
NOVEMBER 1974

REVIEWING THE BASICS

THE BACKYARD MECHANIC

THREE GREAT PROS

DRIVER



Land Sailing

DRiVER

Land sailing club members will often arrive at the sailing site late Friday, then get up early Saturday to rig and check things out for the day's activities. Joining such a club is not only the safest and most beneficial way to go, it's by far the most fun.

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land

Although few of the land sailors shown in this article are wearing a helmet, DRIVER strongly recommends that you readers wear one when engaged in this hobby

sailing

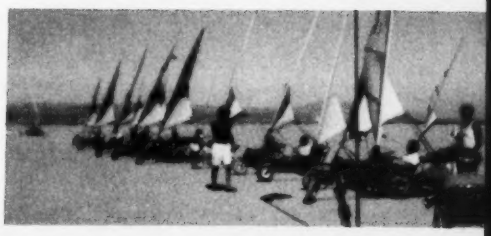
by Colonel PAUL S. CLELAND

The idea of sailing on dry land isn't really new, but a lot of people are just discovering it. If you like sailing—or think you would—but find yourself stationed miles from suitable water, dry-land sailing is as close as the nearest parking lot and can provide the same kind of fun as the wet version.

To take part in this sport, however, requires a fundamental knowledge of sailing. If you aren't experienced in conventional sailing, by all means sign up for a small-boat-handling course. The Coast Guard sponsors them almost everywhere. If you can't find a course to attend, then acquaint yourself with the basics of sailing by getting some books from the library and studying them. Good references are "This Is Sailing" by Richard Creagh Osborne, "The Glennans Sailing Manual" by Phillip Harle, and "Basic Sailing" by M. B. George.

There are many variations of the land sailer. The basic model is a three-wheeled vehicle with a steerable nose gear that is controlled with the feet. This arrangement permits free use of the hands to hold the sail sheet rope while maneuvering, and at the same

continued



DRIVER

THE TRAFFIC SAFETY MAGAZINE FOR THE MILITARY DRIVER

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DEPARTMENT OF THE AIR FORCE · HQ AIR FORCE INSPECTION AND SAFETY CENTER
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THE EDITOR SPEAKS

DOUBLE CLUTCH

IF HE GETS AWAY WITH IT . . . WHY CAN'T I?

On a recent trip, a couple of fellow servicemen cornered me with an irritant. It seems there was a local high-ranking individual who rode around on his motorcycle while wearing an old aircrew helmet.

The question raised was a natural one. Why should the serviceman bother with the helmet requirement or any other requirements when a superior gets away with blatantly violating the regs?

The answer to this one seems pretty simple, yet very important. The violator is **dead wrong** in what he is doing. But by following his example, a person would be doing something even worse.

The helmet rule is a good one. It's not a hassle, either. Aircrew helmets are designed for a different kind of protection than are cycle helmets. They are dangerous to the cyclist because they will not stand up when needed most. The reg violator may be attached to his helmet because as a pilot he cheated death many times. But if he has a cycle accident in which the helmet is put to the ultimate test, **he will lose.**

My point is this. Don't lower yourself to emulating those who are wrong, especially when the rules they violate are designed specifically to prevent them from being harmed. To do so would be putting yourself down when you probably have much more going for you than the rule breaker.

NEXT MONTH
Training "Wrenches"

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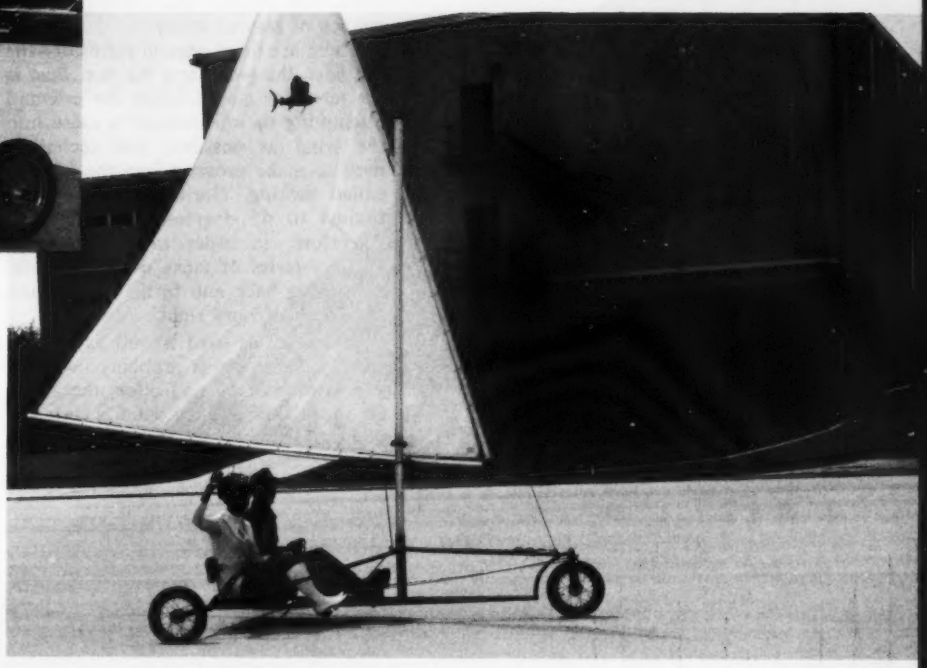

(above)
Airman Basic Bryan Ingraham of the 3708th Basic Military Training Squadron explains the fine points of land sailing to Airman Linda Minor, Miss Lackland. Turn about is fair play. Airman Minor, a marksmanship instructor in Lackland's Department of Security Police Training, had earlier in the day instructed Airman Ingraham in the fine art of firing the M-16.

(right)
The trainee drill pad at Lackland AFB provides a fine spot for sailing Colonel Cleland's rig. (If this were not a posed photo, both people would be wearing protective head gear.)

Paul Cleland assembles one of the land sailing vehicles with the help of Bryan Ingraham and Linda Minor. Bryan is a water sailor from Miami so he took easily to land sailing.

time it offers the operator some protection by providing a hand-hold when needed.

These land sailers can be operated on any flat, obstacle-free surface that is in good condition—large parking lots; abandoned or secluded parts of airfields; ramps, runways or taxiways. In some parts of the country, hard-packed beaches or dry lake beds make good sailing surfaces. Convenient locations are nearly always available without having to travel any great distance.

Done properly, land sailing is both safe and thrilling. But if basic safety precautions aren't followed and the operator is irresponsible, it can be very dangerous.

Because this seems such a new sport, it is surprising to learn that there are laws in many communities that place restrictions on land sailing. For instance, one such law requires that if you operate your land sailer on a public thoroughfare, the vehicle must be equipped with brakes, lights, horn and turn signals. Smart sailors won't be operating their vehicles on public thoroughfares anyway, but be sure to check the regulations in your area.

Once you have assured yourself that all the basic safety factors have been considered and that you and the vehicle are ready for sail, it is time to consider technique. Remember that the wide wheel base of the vehicle will assist you in keeping it upright most of the time, provided you are using correct procedures. The paramount thing to remember when it looks like things are getting out of control is to release the tension of the sail sheet rope and then, if necessary, turn into the wind.

If you are sailing during high winds or gustiness, you may encounter a brief period when the vehicle is traveling on only two wheels, or you may hold it over to the point where it can turn completely over. Because this can happen so quickly, it is important that you and your passenger are strapped in with safety belts, If you are strapped in, it isn't likely that you will be seriously injured because the mast will

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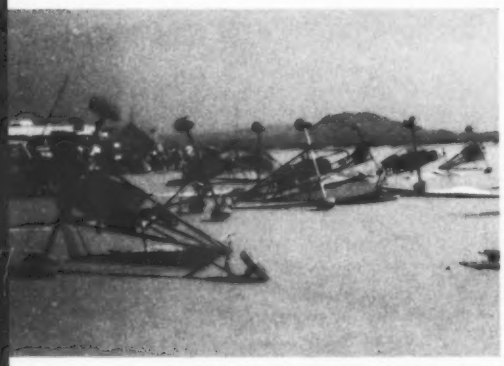


absorb most of the impact. But without safety belts, you are likely to be thrown from the vehicle and then there is chance of serious injury.

There are three general points of sail: the *beat*, the *reach* and the *run*. *Beat* is the term for close-hauling the sail and attempting to sail into or as close into the wind as possible. The technique used to make progress into the wind is called tacking. Normally, the craft is limited to 45 degrees into the wind. Therefore, in order to sail into the wind, a series of tacks must be made, zigzagging back and forth, turning into the wind left and right.

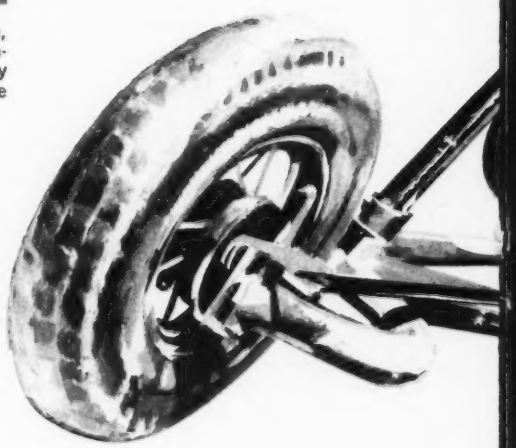
The *reach* is used to sail across the wind. This course is probably the most exhilarating of all and offers the greatest speed. The relative wind is certainly highest. More lift on the sail is gained on a reach and there's the least resistance. The force on the sail added to the lift by the wind blowing behind the airfoil-like belly of the sail, resisted by the direction of the wheel roll, give a resultant vector forward across the direction of the wind.

Finally, the *run*, downwind or with the wind, is likened to the old square-rigger that sailed best with the prevailing wind. Speed is limited to the rate of the wind, minus the friction drag of the wheels.

Here we should discuss the jibe caused by changing direction away from the wind. This is an especially dangerous maneuver when altering course in a run. During this exercise, the boom must swing from one extreme side to the other. If the sail is stopped abruptly on the side to which it swings, it can cause structural damage or capsize your craft. During a turn away from the wind, there is no deceleration; therefore, less control of the craft is maintained. This technique may be used to advantage during competition by an experienced sailor. But the novice should first turn into the wind when coming about or changing directions. This tacking maneuver brings the craft into the wind, thereby slowing down the craft so that you may complete the maneuver safely.

If you let your craft run directly into the wind for too long a time, it may eventually come to a complete stop. This is called *luffing*. Obviously such a tactic will get you nowhere. But it can

It's no wonder land sailing is becoming so popular. There is no wasted fuel, pollution, or noise. In fact, just like water sailing, the participant is in harmony with the environment, plus, he has the challenge of utilizing natural forces, a new experience for many engine-oriented individuals. Yet the thrill is there, and the dangers slight if you take steps to minimize them.



ABOUT THE AUTHOR

Paul Cleland has had a lifelong love for sailing. Stationed at Luke AFB in 1956, he missed the sport so much that he did a lot of research, then built a land model which he sailed successfully on Luke's tennis courts. Eighteen years later he is stationed at Lackland and again is a land sailor.

The development of his current vehicle compares to the development of a new aircraft. First he built a wooden prototype of scrap lumber followed by an aluminum I-beam main spar with a channel-beam cross beam. This gave him the opportunity to try several mast step/wheel relationships prior to building the final rig, which is of square steel tubing construction. It is a two-place, foot pedal, nose gear-steered tricycle vehicle he calls "The Zephyr." The prototype cost him $200 and the new model about $500 plus sail. He uses the sail from his Sailfish sailboat.

be your ace-in-the-hole to insure controlled sailing.

If you do get into trouble, let go of the sheet and luff by turning into the wind. There is a possibility that by heading into the wind for long periods the craft may be blown backward. The nautical term for this is *in irons*. Controls must be reversed to get out of the situation. Just turn away from the wind to fill the sails and you will resume your travel in a forward direction.

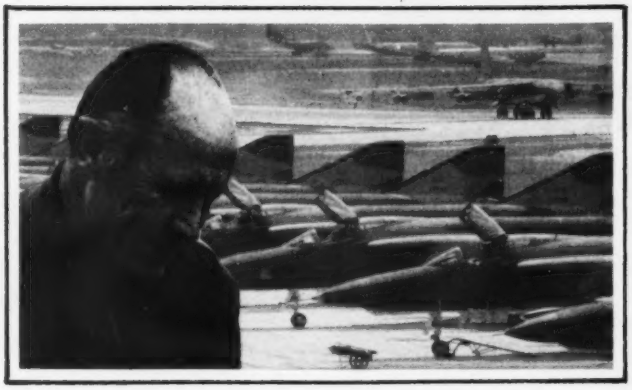
Land sailing is great sport. Speeds of well over 40 mph have been reached, and speed is limited only by the rate of the wind or the limitation of equipment and operator. Such speeds, so close to the ground surface, give a sensation of really moving. Land sailing is an outdoor sport that can offer you hours of real enjoyment, without worry of accident or injury, if you know and follow the rules of the game.

SAFETY PRECAUTIONS

- Insure that the vehicle is sturdily built and constructed to offer the operator the best possible protection.
- Secure all threaded parts with locking nuts or safety wire.
- Be sure that all control ropes and lines are of sufficient strength to accomplish their intended purpose.
- Install and use adequate safety belts and always wear protective headgear.
- Sail in an open, uncongested area, free from obstructions.
- Plan your course before you begin.
- Prior to start, be sure all lines are free to enable you to release the running rigging in event of emergency. Check all pulleys for free-running control.
- Keep sufficient space between vehicle and any obstructions to permit you to sail into the wind should an emergency occur.
- Be constantly alert for other vehicles, obstacles and pedestrians. (You will attract observers and they will try to get close to the vehicle.)
- Avoid sailing yourself into a corner.

THREE

Some famous men
offer you their personal views
on driving



This year's California 500 brought together 33 of the hottest pilots on the United States Auto Club (USAC) championship circuit. Even though the cars were running with trimmed wings* this season, they were definitely flying around the Ontario Motor Speedway oval. And charging hard as ever was Bobby Unser.

Long a top contender on the USAC trail, Unser established himself as the USAC speed king in 1972 when he set new records at every track but one along the circuit. But that year he had trouble finishing races.

At this year's Cal 500, however, Bobby unveiled a different style. Holding back early for once, Bobby didn't start his charge until the closing laps of the race. But by the final lap, despite his brother Al's desperate efforts to hold him off, Bobby's screaming "Eagle" was closing quickly as the cars dove one-two into turn three. Coming out of four, Bobby coaxed a little extra boost from his turbo and flashed across the finish line a matter of feet ahead of his brother to win one of the closest and most exciting races in USAC history.

It goes without saying that Bobby Unser was in pretty fast company on the Ontario oval. But he was also with some mighty fast company right before this year's 500. Chatting with Bobby around his "Eagle" only minutes before the flag dropped were Brigadier General Charles Yeager, the first man to fly faster than the speed of sound and the Air Force's most famous test pilot, and Sam Hanks, winner of the 1957 Indy 500 and well-known figure around American auto racing circles.

DRIVER was also there and was lucky enough to get a chance to talk to these world-famous pilots. They each had some interesting things to say we thought we'd pass along to you.

In an effort to slow down the cars to make them safer, USAC required the special airfoil wings that hold the cars down on the track to be reduced in size after the tragic 1973 Indy 500.

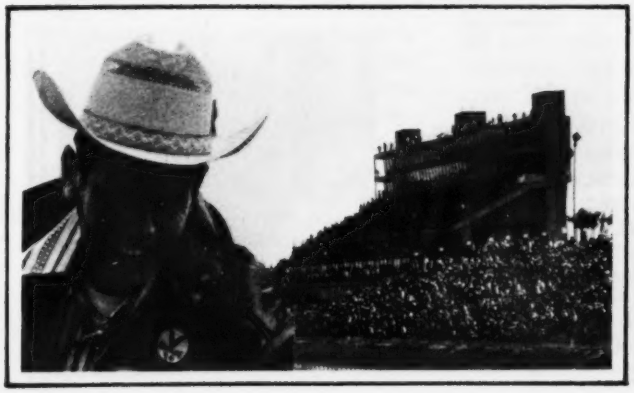
GREAT PROS

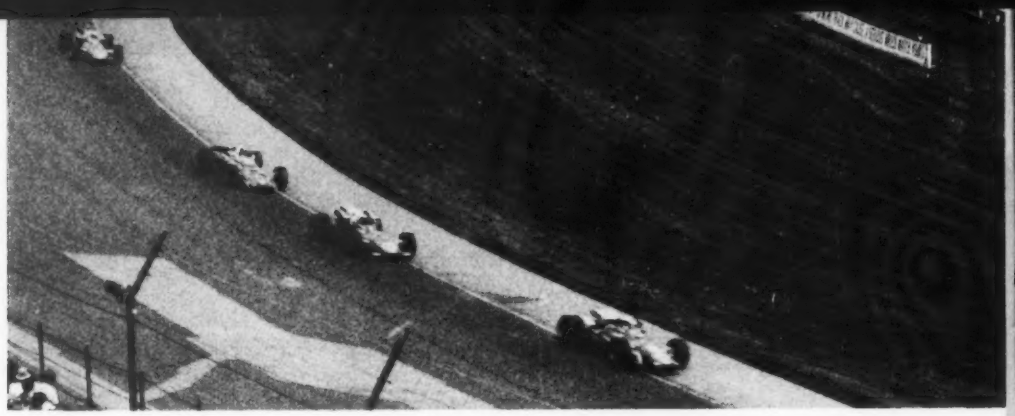
Sam Hanks

When you speak of safe driving, you have to consider the many factors that go into it. The best place to start is with the vehicle itself. *It* should be safe.

continued

"In major auto racing associations, seat belts and shoulder harnesses are mandatory. Use yours".





■ Brig Gen CHARLES E. YEAGER

Brig. Gen. Charles "Chuck" E. Yeager was the United States' leading test pilot for nine years, and the first man to fly faster than the speed of sound. At one period he flew an average of 13 different aircraft monthly. In 1946 he flew captured German and Japanese enemy aircraft including a ME 262, one of Germany's first jet fighters. General Yeager is an ace, and on one WW II mission downed five German aircraft. He is now the Air Force Director of Safety, but remains an active pilot.

■ BOBBY UNSER

Bobby Unser clinched the title of United States Auto Club (USAC) National Driving Champion again this year. He won the California 500, the Trenton 200, was first in the first round International Race of Champions, and had wins or high finishes in several other races in 1974. Bobby started racing stock cars when he was 15 and won his first state championship a year later. He's been a racing legend ever since. This year he also moved up to third place in the All Time USAC point standings.

■ SAM HANKS

Sam Hanks won the Indy 500 in 1957. Prior to that, he was the National Midget Champ (1941 and 1949), the National Big Car Champ (1953), and the Pacific Coast Stock Car Champ (1956 and 1957). Sam has been the Director of Racing at Indianapolis since 1959. Currently, he is a consultant for Raybestos Brake Division of Raybestos Manhattan Corp., and he's also a consultant for the Monroe Auto Equipment Co. Mr. Hanks is also on the advisory board of the Professional Racing Pilots Association.

Every car should have excellent brakes, tires, suspension components, and front wheel alignment. Each of them is vitally important for car control and safety. Other components—lights, windshield wipers, restraint devices, mufflers, and exhaust systems—are also very important in making a vehicle safe for driving. But there is one thing for sure. The vehicle, regardless of condition and preparation, will respond only to the input by the driver at its controls.

In order to enjoy the pleasures of driving and to be a credit to the motoring public, there are several things you should keep in mind. For instance—drive far ahead. Don't just watch the car in front of you. Watch the traffic ahead. Look for stoplights to change, from three to six car lengths ahead of you.

As a warning to the driver behind you that there is slowing traffic ahead, tap your brake pedal. Remember, the car *behind* you could put you in the hospital, too. You've got to keep a check on the traffic behind you, in order to know what the conditions are and the positions of other vehicles, in case you have to take evasive action.

Here's something I think is really important. Don't lock the wheels when you apply the brakes. Too few drivers realize that stopping the front wheels from rotating while the vehicle is still moving will cause you to lose all means of changing directions. You'll have no capability of steering no matter how you try.

One of the most important things in driving is concentration. Don't allow distractions to interfere with your driving. It takes only a split second to be in real trouble if you let your mind wander, whether you're looking for something on the seat, turning your head to talk to someone, or just daydreaming.

In major auto racing associations, seat belts and shoulder harnesses are mandatory. Use yours. They make you a part of your vehicle and keep you in the cockpit area where the controls are. For example, on a hard left turn it's possible for you to slide across the seat and lose control. A person using a seat belt and shoulder harness has a lot better chance of surviving a serious accident with only minor injuries.

One of the greatest safety devices in the world is a free and alert state of mind. As a driver, you should always try to maintain a HAPPY STATE OF MIND. You'll be able to think more clearly, and that's a good part of what it's all about, isn't it? ■

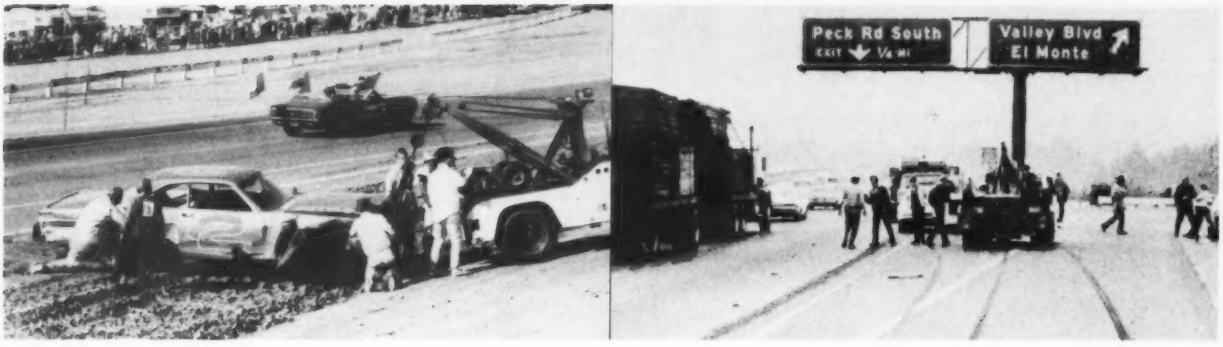
Also, there are those who think that, when they get a couple of belts in them, their reflexes are quicker and they can drive faster. But it's a proven fact that alcohol slows reflexes and lowers driving ability tremendously. You won't find racing drivers having a few before a race. They're too smart for that. And besides, if anybody is caught drinking or taking any kind of dope before a race, he's kicked out of the Association forever. It's just not tolerated.

Mechanical condition is another one of my favorite subjects. I could talk for hours on this because I'm a mechanic and ran a shop for many years. I think it's good for people to work on their cars, but they should be very careful. Too many guys will

continued

People always ask me about the difference between driving on the street and on the track. I think the big difference is that on the street a great many drivers just aren't alert to what's going on. They're listening to the radio, thinking about business deals or their girl friends, etc. These people just don't take driving seriously . . . until they've had an accident, that is. Then, they wish they had.

"An awful lot of young people are really interested in cars and competition. But they certainly shouldn't do any racing on the streets and highways. There's no future in that. I'd suggest they get into sanctioned modified races . . ."



continued
THREE GREAT PROS

jack up a car and then not put a safety stand under it. This was the biggest problem I had with my help. And when I was in the Air Force, I saw a lot of men around the barracks working under their cars without using jack stands. If you have ever seen a car fall on someone, you know it's not a very pretty sight. I have. It's such a senseless thing.

An awful lot of young people are really interested in cars and competition. But they certainly shouldn't do any racing on the streets and highways. There's no fuure in that. I'd suggest they get into sanctioned modified races—jalopies, stock cars—and get it out of their systems that way. Then they'd have the benefit of safety inspections prior to the races, fair contests for everyone, and prompt emergency help in case of injury. ■

Well, this is a wrong impression in many respects. I'm not saying that test flying isn't dangerous—it is—but the driver who makes a mistake or fails to recover from an emergency situation can get in just as much physical danger as the pilot. Plus, the driver is stuck with it because he can't punch out when he or his machine has problems that result in unrecoverable loss of control.

The driver is up against real disadvantages when compared to a pilot. Perhaps the biggest one is having to deal constantly with other drivers. Every time he's in traffic he spends much of his time anticipating the actions of countless other drivers. And some of these drivers are unpredictable, erratic, and even aggressively dangerous.

It's a different story with the pilot. Except in unusual cases such as formation flying, his contact with other pilots is negligible. He is faced with fewer distractions than the driver.

In the cockpit everything is very businesslike—no plush seats and carpeting here. This austere atmosphere, coupled with the fact that the pilot is constantly involved wih procedures related to flying and monitoring his equipment, makes it easier for him to stay with the job at hand.

Compare this to the driver's environment. Everything extraneous from attractive members of the opposite sex to billboards compete for his attention. When you throw in the car's stereo system, cigarette lighters, and other luxurious distractions along with perhaps some talkative passengers, it's no wonder some people drive so absentmindedly. Don't get me wrong. Stereo, girlfriends, and the like are great, so long as you don't let them get to your driving ability.

Whenever I drive I make every effort to consciously carry the businesslike pilot's approach over to my driving. It's not always easy, but it's paid off many times.

Some people think the dangers facing a pilot—particularly a test pilot—are more extreme than what confronts the car driver. They perhaps picture the pilot scorching through the sky at mach 3.5, all the time flirting with total disaster.

Chuck Yeager

"Everything extraneous from attractive members of the opposite sex to billboards compete for . . . the driver's . . . attention."

BRITISH TERMINOLOGY

HOW DO YOU SCORE?

Driving on the Left Isn't the Only Problem

"There I was that cold, rainy night—stuck at a layby just off a dual carriageway. Wouldn't you know the dynamo would stop working? It made me so mad I almost hit the wing with a spanner from the boot. The final straw was that articulated lorry with the bad silencer. When it roared by splashing mud in my face I wished it would run out of derv at the next busy roundbout."

Sound like gibberish? It's not really. Though it's unlikely you would come across a statement like the one above —it *is* likely you will come across these terms if you are stationed in the United Kingdom, or have occasion to visit.

We put this little quiz together to point out something. Driving in the U.K. involves more than merely getting the hang of driving on the left. To be on top of things, you have to know the local traffic regulations, be ready to deal with road and traffic conditions you are unaccustomed to, and learn the terminology.

Those of you who haven't been lucky enough to live or visit in the U.K.- how do you score on this quiz?

BRITISH TERMINOLOGY

Roundabout	Tyre	Bonnet	Dynamo
Layby	Windscreen	Boot	Derv
Dual Carriageway	Silencer	Wing	Articulated Lorry
Petrol	Spanner	Overtake	Lorry

(Answers on page 19)

Terms provided courtesy SSgt Robert W. Barth, RAF Mildenhall

Load

by Larry Johnson

Larry Johnson began his riding career back in 1948 with a Cushman motor scooter. He soon moved on to a Mustang Motorcycle, a '48 Harley, then a '62 Harley. Currrently he owns a '58 Cushman Eagle and a Honda CB 350. Larry is a Navy officer stationed at Norfolk. In addition to motorcycling, he enjoys flying with the Norfolk Navy Flying Club. He presently holds a commercial certificate with instrument and multi-engine ratings. DRIVER considers him well-qualified to give advice to new riders; the views expressed in these columns are strictly Larry's own.

On my present bike there is a placard on the rear fender:

COLD TIRE PRESSURE		
UP TO 200 LB LOAD	FRONT 26	REAR 28
UP TO VEHICLE CAPACITY	FRONT 26	REAR 34
VEHICLE CAPACITY LOAD 330 LB		

That placard is, or should be, a bible. Every "motor" nowadays has one and whether you believe it (and ride by it) or not will make a big difference in how happy your riding days will be.

Let's ignore that safe weight placard for a few paragraphs and just concentrate on some very obvious aspects of overload that you experience. If you're like me, you're tipping the scales at 190 or so. When you hit the highways and byways you might take a buddy, and if he's like you that's another 190 give or take some. So now, coming out of a stop your bike acts like a "sick dawg" instead of a "hot hawg."

If your buddy is an experienced passenger he is playing dead; he is trying to be part of the bike, leaving the control to you as he should be. But you find you are really horsing the beast instead of flowing around these corners like you are accustomed to doing. If your rider is not cooperative and seems to think he has to help, you will wonder why you seem to be riding drunk when you have only been on coffee.

Other more obvious problems will be chain and tires. If you are lugging your buddy pretty regularly, your rear tire and drive chain are going to show it—like in 2000 to 3000 miles or so. Take it from me, don't skimp on replacing a chain. When the chain gives up the ghost it takes sprockets with it—fast.

Beyond what we have mentioned so far, the obvious, there are some less obvious but far more dangerous aspects to overloading that can be costly and maybe even deadly.

Coming back to my bike, after looking at the placard I then checked the imprinting on the tires. Guess what? MAX PRESSURE COLD FRONT 26 REAR34. And those are the pressures on the placard. This is the pressure that the manufacturer has designed for the tire under running conditions. The cord stress is balanced to load, the tire has the best profile for max traction. And in this condition the tire is most resistant to damage from things like rocks, gravel, glass, pot-holes, etc. Overload and you are risking damage to the cords and casing of the tire. Damage that you cannot see. One day you are making it with your buddy and POW! A rear tire blow-out at 50 or 60 is a dance to a tune that no rock group yet can play. I mean, friend, that you won't feel like dancing.

Let's be realistic; you are going to carry a friend on occasion. Check your placard, make sure your tires are at the pressure, set the shocks up (most bikes have three or more settings on the rear shocks) and then if you are over max weight cut down your speed accordingly—by at least 20% to be on the safe side. And above all never exceed that limiting cold-tire pressure or you will be asking for early and unpredictable tire

and Overload

failure.

Well that's a whole bunch of words to swallow. Here's something that you can try that will make a believer out of you—as it did for me. Get a few of your friends to work this with you and get some spirit of competition going.

Find an open flat area, parking lot or something like that, and lay out a line about 120 feet long. Set up pylons or markers of some kind on 15-foot centers to make a weave or slalom course. Now with just you on the bike, run this weave several times until you are fairly good at making the weave and leaving the markers standing. No fair touching the ground with your feet unless you are about to lose it.

Now put a 100-pound sand bag on the bike with you, positioned so that the bag is upright and in about the same position as the torso of a buddy. This was easy for me since I have a sissy bar and just strapped the bag to that. I recommend a bag of sand because that is the ideal passenger. Another human being would not be "dead" enough for this trial. What we are trying to demonstrate is the complication of the control problem even with the *best* passenger.

Now with the "sand bag buddy" try running that weave course again. It will really make a believer out of you.

Well, there it is in a nut shell. Your bike has a weight rating and to meet that rating safely requires positive effort on your part. Know your weight and your buddy's, keep your tires at the right pressure, set up your shocks, and reduce your speed accordingly. Happiness is having a riding buddy who knows that you are looking out for him (or her) too.

Larry Johnson

PASSING

MOUNTAIN DRIVING

BA
BAS
r

All of us are creatures of habit—and at no time is this more true than when we are behind the wheel. Lend your sports car to a buddy who usually drives an automatic transmission and watch him change gears too much or oversteer. You borrow his car and notice how your left foot reaches for the clutch pedal that isn't there.

Habit doesn't just influence our operation of the controls, however. It also affects the speed at which we drive, how we change lanes, how we react to traffic signals, in fact, everything we do on the road.

Because habit does play such a big part in driving, it is smart to review the basics occasionally and to take an honest look at how we're doing. Last issue we talked about city and freeway driving, braking and curves. This time we're going to examine passing, mountain driving, and road signs.

PASSING

The driver of a car about to overtake another car on a two-lane highway waits for just the right moment, accelerates, moves around the car ahead, then eases back into the right lane again. An outwardly simple maneuver. And to a bird flying overhead, it must look easy.

Indeed, to the experienced driver, the act of passing another vehicle is not all that difficult. But whether he is aware of it or not, that simple maneuver is a rather cerebral act, requiring a headful of quick, accurate calculations and evaluations. Passing another car on a two-lane highway is a potentially dangerous move, since the passing car occupies the same lane as oncoming traffic for several seconds. A miscalculation, an error in judgment, or a brief surrender to frustration or anger can suddenly put the passing driver face to face with the most deadly of all traffic accidents—the head-on collision.

As an experienced driver you are hardly aware that when you pass another vehicle—especially on two-lane roads—your brain acts quite like a computer. Your eyes and other senses feed the brain input data—how much clear road there is ahead; intersections; what the weather and road surface conditions are; potential dangers such as oncoming traffic, parked cars, pedestrians, cyclists, or anything else that might cause the driver of the vehicle you are passing to suddenly swerve into your path. Additional input data include whether or not you've seen anything in either of your rearview mirrors or in the "blind spot" when you take that last-second glance over your left shoulder (there may be another vehicle in the act of passing you.) Your brain receives all this input information in fleeting fractions of seconds, processes it, assesses it against the known performance of the car, and either gives the maneuver a "go" or "hold."

The computer analogy ends right at that point because the brain is subject to some influences that computers are not—human emotion and errors of judgment, for example. How a driver reacts to his brain's computations—indeed, how his brain actually operates—depends to a large extent on his own maturity level, judgment, habits, degree of self-discipline, not to mention whether or not his brain is clouded with anger, frustration, alcohol or drugs.

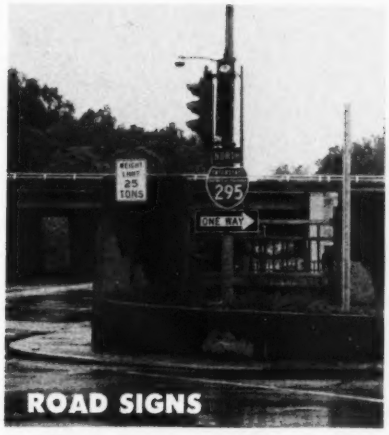
What clear-thinking driver, for instance, would attempt to pass on a hill or curve? Or pass on a narrow bridge, at a railroad crossing, or at an intersection? Or cross a solid line to pass? According to accident statistics, there are quite a few drivers who do.

The act of passing another vehicle boils down to one of the most highly individual actions a driver undertakes. It is a maneuver that requires attentiveness and care. It is a technique each driver has to work out for himself. It requires on-the-spot observations and decisions by the driver. All that can be offered here are the following pointers on what constitutes good passing techniques and precautions. It is up to you —the individual driver—to take it from there.

BASICS

PART II

reviewing the BASICS



ROAD SIGNS

■ Follow the old advice to "drive ahead." Look down the road and to the sides for situations that might affect your passing patterns. If you have any doubts whatever about making a successful pass, cancel the maneuver.

■ Watch for traffic signs and pavement markings and lines. Do not begin a passing maneuver if you can see a sign up ahead that might indicate a turn or an intersection. A broken center line usually indicates it's all right to pass (providing the road ahead is clear). But never cross a solid line on your side or a double solid line, even if the road seems empty of approaching traffic. There is a reason for solid lines being where they are.

■ Check your mirrors, glance over your shoulder, and start your left turn signal before moving out of the right lane to pass. When you are far enough ahead of the passed vehicle to see its front in your inside mirror, activate your right turn signal and ease back into the right lane.

■ If, as you start to pass, you notice a sharp burst of exhaust from the tailpipe of the vehicle ahead take care, he may be speeding up and you'll have to delay your pass. Some drivers are like that. By the same token, whenever you are being passed, make it easy for the following driver to get ahead of you. Perhaps you can ease a little to the right. And if it looks as though he is crowding his luck as far as passing room is concerned, slow down a little so he can complete his pass sooner.

■ If you have any reason to believe that the driver of the vehicle you want to pass isn't aware of your presence, tap the horn a couple of times before passing.

■ Once you have started to pass, don't dawdle. It is best to use your car's acceleration capability on higher-speed highways.

■ Try not to pass more than one vehicle at a time on two-lane roads. Reconsider after passing each vehicle.

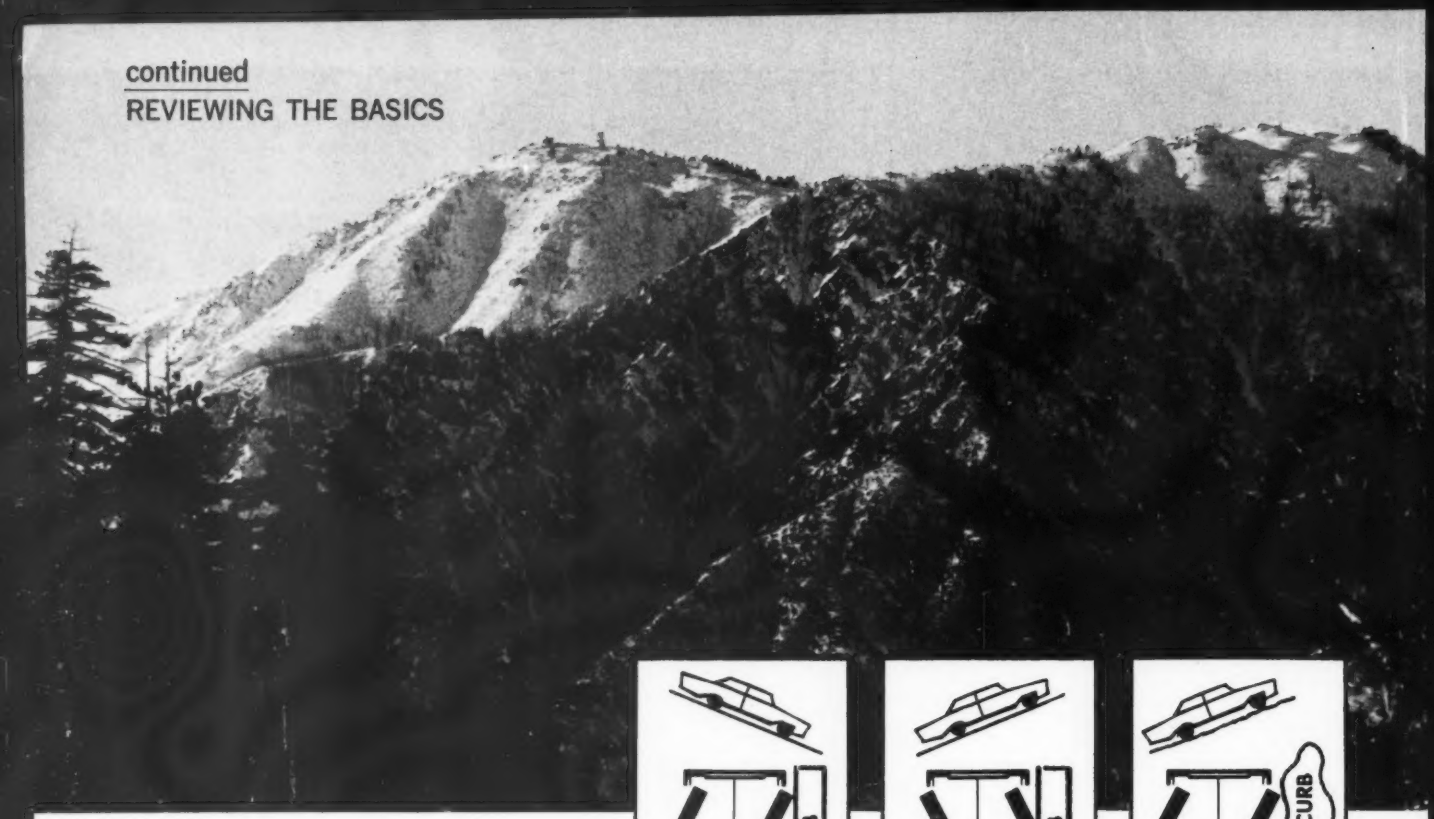
■ If other cars are lined up to pass a slow vehicle, wait your turn. But take care that someone who does not have your patience isn't trying to pass you as you pull out to pass the slow vehicle. Remember to glance over your shoulder and check that blind spot.

■ Do not crowd the vehicle you want to pass while you're awaiting an opportunity. For one thing, it reduces your area of vision, especially when following a truck. Also, you do not have an adequate space cushion to maneuver in if the vehicle ahead suddenly slows or stops. Keep back a reasonable distance. When it looks like a chance to pass is coming up, start to accelerate (but stay in the right lane and don't get too close), and time your move so you will be increasing speed as the time comes to move into the other lane. If the way is clear to pass, you will have a "running start" that more than makes up for the distance you lose by dropping back. And if something happens to cause you to cancel your pass, you need only slow down and drop back again and wait for another opportunity.

■ Don't overtake a slowly moving vehicle too rapidly. Even though his brake lights are not flashing, he may be slowing down.

■ When someone is passing you, do not speed up. It is discourteous, dangerous and often illegal. It is something good drivers just don't do.

continued



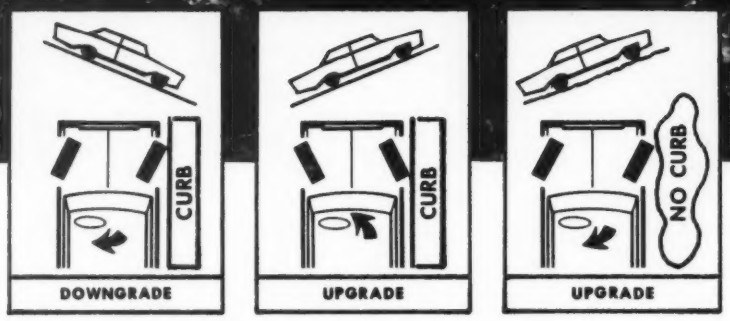


Fig. 1

MOUNTAIN DRIVING

Chances are that all drivers sooner or later face the challenge of mountain driving. It can be a stimulating rather than a troublesome experience, but it does require an adjustment of one's approach to the driving task.

Anyone who lives and drives in a mountainous area knows the importance of proper car maintenance. The "passer-through" might not. It is extremely important, for example, that the car's braking system be in first-class condition—properly adjusted, a good amount of life left in the linings, properly functioning wheel cylinders, correct brake fluid level, and undamaged brake lines. The cooling system must be at its best, also —clean, full of the proper coolant (mixture of anti-freeze and water), hoses and fan belt in good condition, and a properly functioning radiator cap and thermostat. The transmission should be in top shape, serviced according to the Owner's Manual, and the fluid up to level.

AVOID DOWNHILL RACING

Possibly the first technique to master in hill and mountain driving is the use of the engine and transmission to help do some of the braking when going downhill. Novice mountain drivers facing long down grades for the first time tend to rely too much on their brakes—rolling along in high gear, gaining speed, applying the brakes long and hard, then rolling some more. Depending on the length and angle of the downgrade and the condition and quality of the brakes, it is possible to overheat the braking system to the point where the brake linings become so hot their friction characteristics change and they either are much less effective or provide no braking action at all.

To avoid this, use a lower gear on a downgrade. This lets you take advantage of the braking effect of engine compression. (You also should use a lower gear on upgrades for better performance and to prevent possible engine overheating.) Never coast down a hill by putting the transmission into neutral or by disengaging the clutch if your transmission is the manual shift type. And never, never turn off the ignition and coast. This can cause all sorts of problems, especially if your car is equipped with an anti-theft steering column lock.

Stay entirely within your own lane when driving on two-lane roads in hill or mountain country. Some drivers are tempted to swing wide or cut across the center of the road rather than to slow down on curves. Resist the temptation. Drive at speeds that enable you to stay comfortably within your own lane.

"Never pass on a hill" is an old driving adage well worth following. On some long, straight inclines passing is allowed because visibility is unrestricted for a considerable distance, but keep in mind that your car's acceleration ability is going to be reduced by the grade and it will take more time to get around the vehicle ahead. Allow your-

self extra passing room. And when someone is passing you and it looks as though he is not giving himself enough time or space, slow down and make it easier for him.

HILL-CRESTING CAUTIONS

Whenever you crest a sharp hill always be prepared for something that might be blocking your lane, such as a car passing another vehicle from the other direction, or a stalled car or obstruction in your lane.

Cresting a hill is a time for extreme caution, perhaps even taking your foot off the accelerator pedal and covering the brake pedal while you look over the situation. When you drive at night you get a break in hill-cresting situations—you usually are warned of another vehicle's approach by the headlights glowing over the top of the hill. Of course, if there is a stalled vehicle on your side of the road, you won't get any warning from headlight glow.

Hills and mountains mean more spectacular scenery, but be careful where you stop if you decide to look at nature or photograph it. Usually, in particularly scenic areas, pull-offs or parking areas are provided for scenic viewing. Never become the type of thoughtless driver who stops his car just over the crest of a hill entirely or partly in the traffic lane, to view the scenery.

Highway departments post pertinent information on signs along roads to tell drivers of impending situations, such as long grades, passing or no-passing zones, a falling rocks area, or winding road conditions. This information should be noted and allowances made.

PARKING ON SLOPES

Even the simple act of parking a car takes on new dimensions in hill country. For example, whenever you park on a hill or grade you should take an extra precaution beyond that of setting your parking brake and putting the gearshift lever in "park" (or in gear if your car has a manual transmission). If you park on a downhill surface, turn your wheels toward the curb. The reason is obvious. If for any reason your brake is not applied properly and you have forgotten to put the transmission in "park" or in gear and the car starts to roll, it will roll into the curb and come to a stop. To park properly you should position the wheel five or six inches away from the curb, then move forward a little and steer sharply until the front of the tire is in gentle contact with the curb. Do not jam the tire against the curb. If there is no curb, just turn your wheels the same way. If the car starts to roll, it will not roll straight on down the hill.

For parking uphill where there is no curb, turn the front wheels to the right, also. If there is a curb, turn the wheels sharply to the left so that the rear of the front tire is in gentle contact with the curb.

For those occasions when you park uphill on the left side of the road that has a curb (on a one-way street for example), turn the wheels to the right so that the curb catches the rear of the front tire. If there is no curb, turn your wheels to the left.

The important point to remember when parking on hills is to always position the front wheels so that if the car starts to move it will not run downhill or move in the direction of through traffic lanes.

ROAD SIGNS

We drivers rely heavily on the "sign language" of our road systems whenever we drive. How well we read and heed what the traffic signs, traffic signals and pavement markings tell us usually is a good indication of just what kind of a driver we are.

Many drivers have never really tumbled to the fact that there is a definite pattern to traffic signs related to such things as their shape and color. Being able to identify signs by their shape and color while we are still some distance from them gives us a clue of what to expect, and is a good example of "driving ahead."

An octagonal sign with white letters on a red background means just one thing—STOP. A diamond-shaped sign is a warning of something ahead—for example, a curve, steep hill, soft shoulder, or a narrow bridge. The "message" is in black on a yellow background. A yellow round sign with a black diagonal cross warns of a railroad crossing ahead. A downward pointing, triangular-shaped sign indicates a YIELD situation and assigns the right-of-way to traffic on certain approaches to an intersection. YIELD signs were originally yellow and black, but now are red and white. A triangular, or pennant shaped, sign also is used on two-lane roads to indicate a NO PASSING ZONE. This sign, positioned on the left side of the roadway, is black and yellow with the tip of the triangle pointing to the right. Rectangular signs are used for regulatory information (speed limits, parking regulations, for example) and for guidance information, such as distance to cities.

We're all familiar with traffic lights or stop lights as they are popularly known. However, we should be aware of the increased use of green arrows in the lights for improved traffic control. On some multi-lane roads, a green arrow(s) lights up to indicate that traffic in one or more lanes can move or make a turn, even though a red light or red X says that another lane(s) must remain stopped. But remember—green arrows are not a blanket approval to move on. The driver must proceed only with due caution, yielding the right of way to vehicles or pedestrians within the intersection. A red arrow also may be used, signifying that there must be a preliminary stop before turning.

Many urban roads and expressways, and even bridges, use reversible-lane traffic control to handle the rush-hour traffic. Even though the roadway is divided equally with marked lanes, a red X over a lane means no driving in that lane at that time, while a green arrow says it is all right to drive in that lane. Signs are posted to warn drivers what hours and days such systems are in effect.

Pavement marking are a supplement to traffic signs and signals and form an important "sign language" in traffic control. They serve as an effective way to communicate information to drivers without diverting attention from the roadway. As with traffic lights, we should all be familiar with the meaning of pavement markings. Unfortunately, there still are too many drivers who seem to forget that a solid yellow line on their side of the road or lane means *don't cross.*

INTERNATIONAL ROAD SIGNS

During the 1970s, road signs are appearing that have new symbols, shapes and colors. These are the result of the progressive adoption in the United States of the international system of traffic control signs and markings. In fact, many of the new signs are now replacing the more familiar signs.

The basic message of the new signs is carried through pictures or graphic symbols. For example, a picture of a truck within a circle with a diagonal slash through it means "no trucks." Information to tell motorists such things as animal crossings, school and hospital zones, or divided highways also are conveyed by graphic symbols. The shape of the signs remains the same,

continued

with the addition of a pentagon being used to indicate a school zone area. In many instances, the new symbolic signs also carry the message in words on a separate sign below the picture, but the pictures are such that the "message" usually can be easily understood even if words aren't used. A few of the new international road signs are shown here to give an idea of what everyone in the U.S. will eventually be seeing along roadways.

Color plays an important part in the new road signs. Red continues to be used to indicate STOP, or to indicate that some movement is not allowed—for example, DO NOT ENTER, or WRONG WAY, and for parking prohibitions. Blue is used for informational signs telling of motorists' services—for example, fuel, food, camping, rest areas, or police services. Brown is used as the background color for signs relating to recreational areas or points of cultural interest. Road construction and maintenance signs have orange as the background color, while green is used for mileage signs and for parking regulations. Black on white continues to be used for regulatory signs.

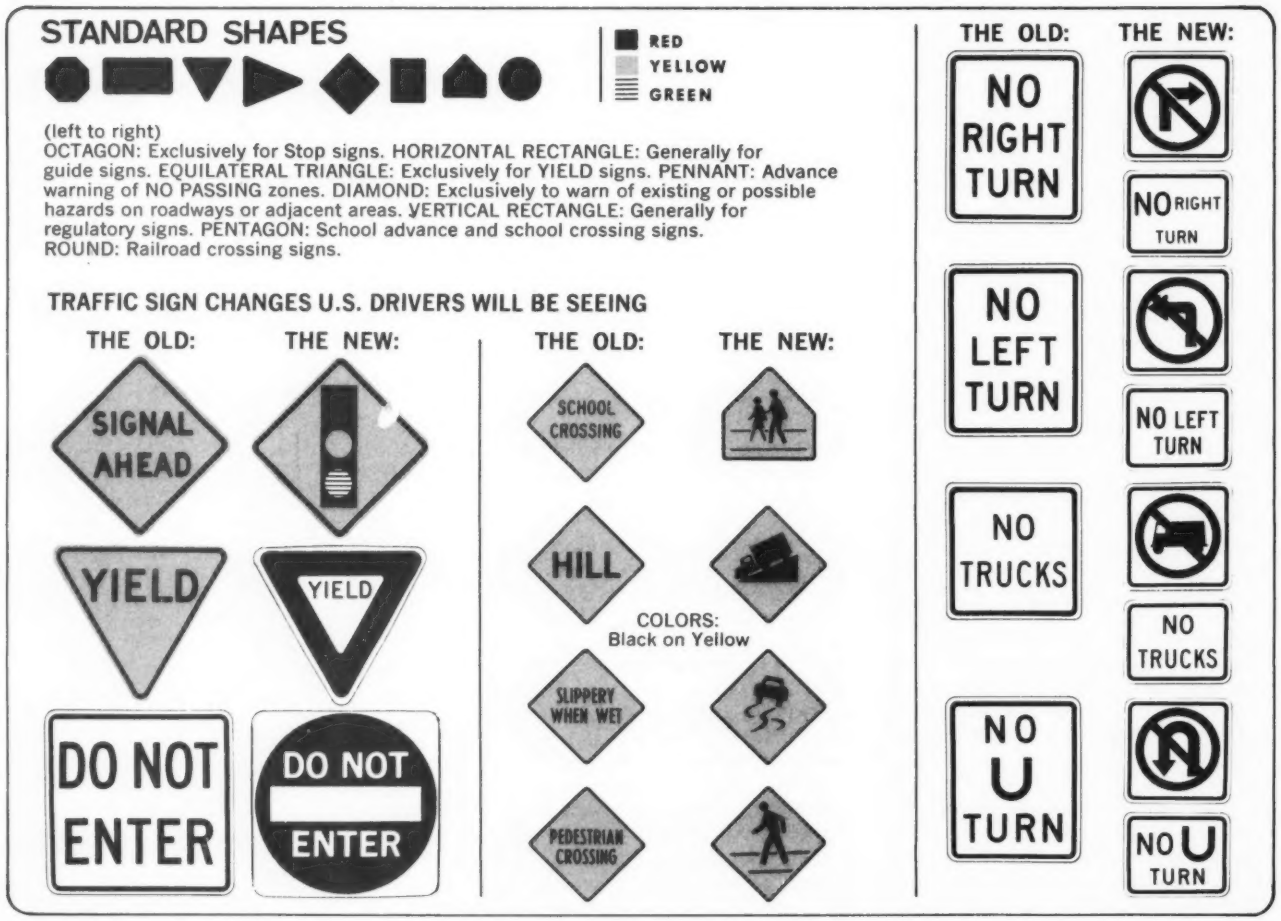
OUR OWN SIGNS AND SIGNALS

Although there are signs, signals, and markings to cover just about all the instructions and information motorists need to know, it is still important that drivers convey their own messages to each other. Signalling turns and lane changes is mandatory. Most drivers use the car's turn indicators, but occasionally, to reinforce the message (or if the indicator is temporarily out of order), we can revert to the standard hand signals—left arm straight out for a left turn, down for slow or about-to-stop, and up for a right turn.

Tapping the brake pedal once or twice in advance, if time allows, serves as an extra warning to the driver behind you, especially if he is tailgating, that you are about to slow down or stop. And four-way flashers say "take care, I am disabled," or "there is a hazardous situation here."

Finally, there is that old standby, but still very effective traffic control system—the traffic policeman. His instructions to stop, move, or turn supersede other traffic signs or signals at the point he is controlling at the time.

(Information in this article courtesy of General Motors)


STANDARD SHAPES
RED
YELLOW
GREEN
(left to right)
OCTAGON: Exclusively for Stop signs. HORIZONTAL RECTANGLE: Generally for guide signs. EQUILATERAL TRIANGLE: Exclusively for YIELD signs. PENNANT: Advance warning of NO PASSING zones. DIAMOND: Exclusively to warn of existing or possible hazards on roadways or adjacent areas. VERTICAL RECTANGLE: Generally for regulatory signs. PENTAGON: School advance and school crossing signs. ROUND: Railroad crossing signs.
TRAFFIC SIGN CHANGES U.S. DRIVERS WILL BE SEEING
THE OLD:
THE NEW:
SIGNAL AHEAD
YIELD
YIELD
DO NOT ENTER
DO NOT ENTER
THE OLD:
THE NEW:
SCHOOL CROSSING
HILL
COLORS:
Black on Yellow
SLIPPERY WHEN WET
PEDESTRIAN CROSSING
THE OLD:
THE NEW:
NO RIGHT TURN
NO RIGHT TURN
NO LEFT TURN
NO LEFT TURN
NO TRUCKS
NO TRUCKS
NO U TURN
NO U TURN

Answers To British Terminology

(see page 11)

Roundabout	— traffic circle
Layby	— rest area (small)
Dual Carriageway	— 4-lane highway
Petrol	— gasoline
Tyre	— tire
Windscreen	— windshield
Silencer	— muffler
Spanner	— wrench
Bonnet	— hood
Boot	— trunk
Wing	— fender
Overtake	— pass
Dynamo	— generator or alternator
Derv	— diesel fuel
Articulated Lorry	— tractor-trailer
Lorry	— truck

About Miss DRIVER

(see back cover)

Linda Smith holds the title of Miss Riverside 1974 and was first runner-up for Miss California. She spends her free time water skiing and sewing and hopes to become a professional singer. Her companion is Lt Larry Randlett, an F-4 Weapons System Officer whose hometown also is Riverside, California.

Sweden Takes The Step

While Americans continue to resist the idea of compulsory seat belt use, seemingly preferring to accomplish the same objective with costly automatic devices of questionable reliability, one by one other countries are taking the more direct route. Sweden is the latest; Britain will most likely be next.

Beginning the first of next year, Swedes will be required to use their belts (which are all 3-point belts) when riding in the front seats of cars if they are 15 years or older and at least 4 ft. 11 in. tall.

Soon, then, we'll have another dramatic set of statistics showing how effective the use of full seat belts is in reducing injuries and fatalities.

(Road and Track)

True or False?

1. *Next to illness and disease, highway accidents are the leading cause of death for Americans under age 25?*

False. Highway accidents are *the* leading cause of death for Americans under 25.

2. *If everybody used safety belts, the traffic death toll would be cut by 8,000 a year.*

False. Between 10,000 and 15,000 lives a year would be saved, say experts.

3. *One out of every four drivers in the U.S. will have a traffic accident this year.*

True.

4. *There are about a million alcoholics who drive in the U.S.*

False. There are EIGHT million alcoholic drivers in the U.S., and another 17 million high-volume social drinkers.

5. *Most traffic accidents are caused by defective vehicles.*

False. Vehicle defects are the principal cause of between 7 and 15 per cent of the serious accidents, but driver error is the most frequent contributory cause of all accidents.

6. *An average of 30 pedestrians a day are struck and killed by motor vehicles.*

True. More than 10,000 a year.

7. *Most states have traffic safety education programs extending from kindergarten through high school.*

False. Most states have some kind of program for those of driving age, but few states have comprehensive safety programs for all age groups.

8. *About one out of every six highway bridges in the country is unsafe.*

True. More than 88,000 bridges have been officially classified as "critically deficient."

9. *Because speeds are higher on Interstate highways, they are more dangerous than conventional roads and streets.*

False. The Interstate Highway System was purposely designed for higher speeds and is twice as safe as conventional roads.

10. *Bicycle riders must follow the same rules of the road as car drivers.*

True. But it is possible, and sometimes advisable, for a cyclist to change to pedestrian rules by dismounting and walking the bike.

How did you do on this test? If you got 8 or more right, you know more than most people about traffic safety facts.

Tire Wear

One of the secondary benefits of the fifty-five-mile-per-hour speed limit was expected to be greater tire mileage, but it hasn't worked out that way, according to the Firestone people.

The reason is that motorists haven't slowed down on corners and are zooming away from traffic lights and jamming on their brakes just like they always have.

Jackrabbit starts and other poor driving habits cause enough rapid or uneven tread wear to offset potential savings resulting from slower highway driving.

To gain better tire mileage as well as fuel economy, slow down on corners and on rough pavement and try to make smooth starts and stops.

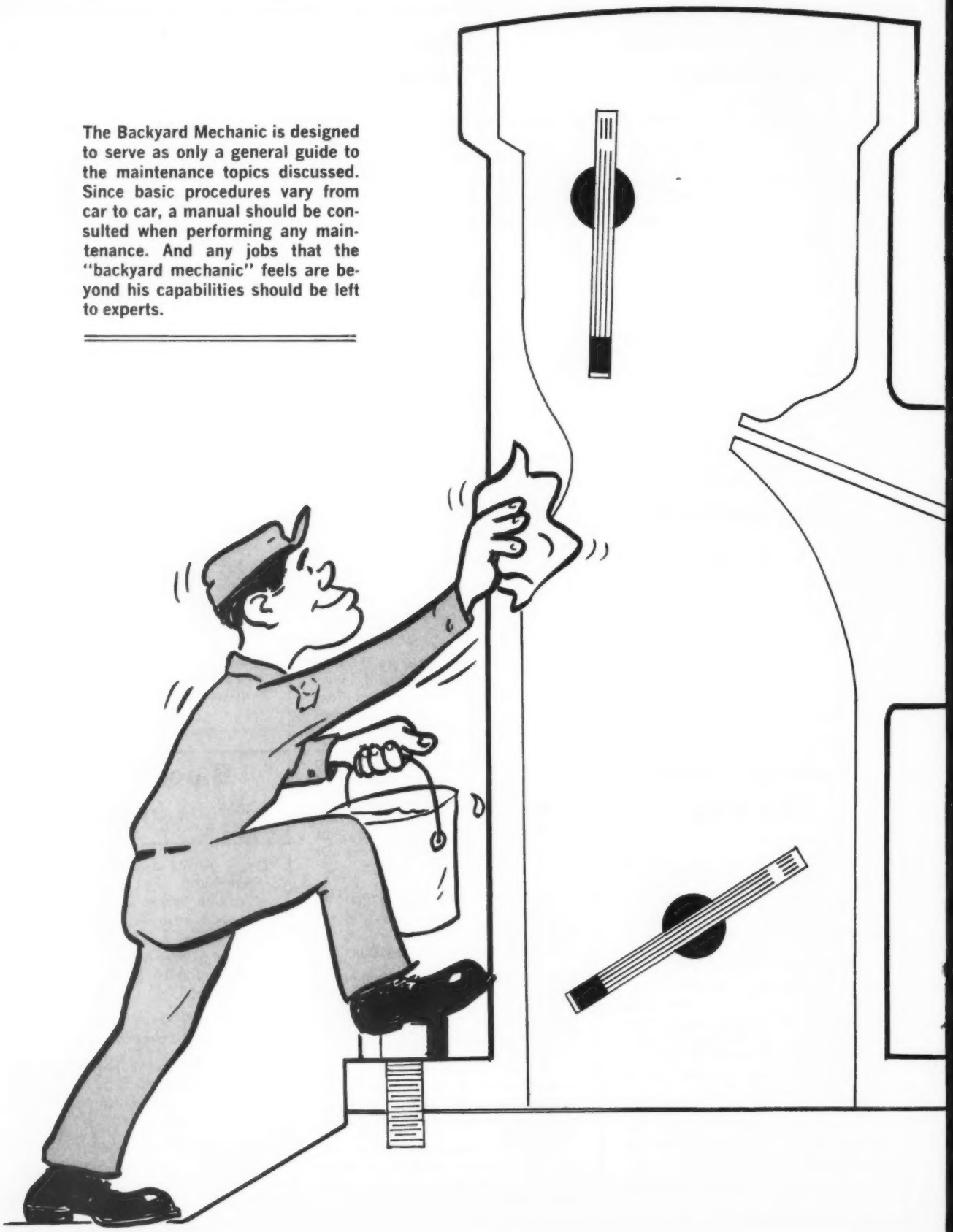
Blood Alcohol Levels

Drunk driving laws are getting tougher everywhere, and there is a long list of nations whose enforceable levels are lower than those of most U.S. states.

Blood alcohol levels at which one is legally presumed to be under the influence are:

- Most U.S. states (and military installations: .10 per cent
- West Germany, France, Britain, Austria, Switzerland, Luxembourg, Netherlands, and Belgium: .08 per cent
- Denmark: .06 per cent
- Sweden and Norway: .05 per cent

The Backyard Mechanic is designed to serve as only a general guide to the maintenance topics discussed. Since basic procedures vary from car to car, a manual should be consulted when performing any maintenance. And any jobs that the "backyard mechanic" feels are beyond his capabilities should be left to experts.

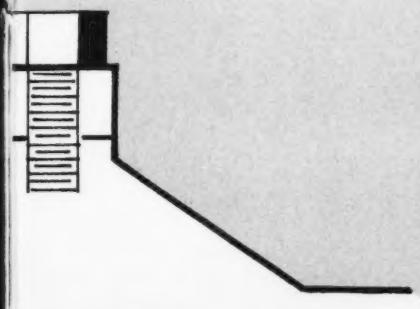


The brand names shown do not represent endorsement by DRIVER or the Air Force. The products were selected at random to illustrate the maintenance procedures described.

CARB CARE

A few years ago a major oil company had a television commercial featuring a grimy character known as "Mr. Dirt." The purpose of the ad was to convince you to use their detergent gasoline to keep Mr. Dirt from doing his thing inside your car's engine. Well, whether or not that gasoline really helped to keep an engine clean, the fact remains that dirt is one of an engine's worst enemies.

Dirt and contaminants inside the engine are big contributors to engine wear. But where Mr. Dirt does his dirtiest work, or at least where you notice it most, is the place where the dirt enters—the carburetor. The list of problems caused by a dirty carb reads like the "Who's Who" of auto ailments. Everything from hard starting and lagging acceleration to stalling and—most important these days—excess emissions and poor gas mileage are caused by a dirty or worn carb. So it's definitely a good idea to keep your carb clean and functioning properly for maximum performance and mileage and for lower emissions.



FILTERS

Thanks to improved air and gas filters on today's cars, carbs stay a lot cleaner, and because they keep cleaner, they frequently last the life of the engine without major maintenance. So the very best way to keep your carb clean and doing its thing is to regularly replace these important filters. But even with regular filter replacement, some dirt and grime finds its way into the carb. And unless you periodically clean out this dirt, it can build up and eventually plug carb jets and passages, as well as cause the carb to wear. If this happens you've got a sick carburetor that may have to be disassembled to be thoroughly cleaned and

continued

possibly rebuilt or even replaced.

CLEANERS

There are a couple of ways to remove accumulated gunk from a carburetor. The easiest method is to use a fuel system cleaner that is added to the gasoline. Just about every automotive products manufacturer makes this type cleaner that generally sells for less than $1 a can. The products go by various names depending on the manufacturer, but they are all essentially the same. If you add a couple of cans of this type cleaner to the gasoline about every oil change it does a fairly good job of keeping the carb clean—especially if you start from the time the car is new. But this type cleaner is not really too efficient at cleaning out built-up dirt and varnish.

CLEANING KIT

The most effective method of cleaning a carb (especially a gunky one) without removing it from the engine is to run solvent directly into the carb, using a special gravity-feed kit. These inexpensive kits are available at most auto supply and discount houses and are quite simple to use.

After removing the air cleaner assembly, the first step in using the kit is to disconnect the gas line at the carb. After carefully disconnecting the line—being sure to catch escaping gasoline in a can or rag—block off the gas flow with the special block-off fitting provided with the kit. Then attach the flexible solvent hose to the gas inlet on the carb, using the correct size adapter from the kit. Install the other end of the hose to the can of solvent and suspend it from the underside of the hood.

Start the engine and run it at varying speeds so the solvent penetrates through all of the jets and passages. Every so often, briefly place your hand over the carb to block the air flow to help force the solvent through the carb. When all of the solvent has run through the carb the engine will die and the internal passages should be pretty well cleaned of gunk and varnish.

To finish the job right, carefully reconnect the fuel line, start the engine and spray a can of aerosol carb cleaner/decarbonizer down the throat of the carb following the instructions on the can. The outside surfaces of the carb—especially linkages—should also be sprayed clean with choke solvent to keep things working right. Also check for any gasoline leaks from the carb or fuel line when you clean the outside.

NOT FOR EVERYBODY

Now, if you've been having sick carb symptoms like poor performance and mileage and cleaning the carb didn't seem to help, you may be in need of a carburetor rebuild or replacement—that's providing you've carefully checked out all other areas that could be causing performance problems. Industry surveys show that car owners generally blame the carburetor for poor engine performance. However, about 80 per cent of the time other problems such as a plugged PCV system, a leaking manifold, or a bad valve are at fault. So thoroughly check all possible sources of performance problems before tearing into the carb. In the case of a malfunctioning carb, first check to see that the heat passages in the intake manifold near the base of the carb are clean. These passages (especially on Chevy V-8's) sometimes plug and cause carb problems. Also check to be sure the gasket between the manifold and carb is in good shape and the carb is tightened down—an air leak here or at the manifold could be

Fuel-system cleaners that are added to gas tank go by various product names. Regular use of this type cleaner helps keep the carb clean.

Gravity-feed kits are the best method of cleaning the inside of the carb.

causing trouble.

But before we go one step further we want to emphasize strongly that rebuilding is not for every carb, nor is it for every person.

Only a few years ago it used to be just about standard procedure to pull off the carb and rebuild it about every other tuneup. Well let's face it, in the last few years carburetors have gotten more complex; but at the same time they've gotten more reliable so they really don't need major maintenance as often if they're kept clean.

Also because of the complexity and the emission control restrictions, most regular mechanics do not attempt to rebuild many of today's carbs. In most cases it's easier and cheaper to simply remove a faulty carb and bolt on a new or factory-rebuilt unit. The same is also true for four-barrel carbs —many skilled mechanics find that it's easier to get a factory rebuild than trying to rework a complex four-barrel carb.

So the fact that "real" mechanics do not try to rebuild all carbs ought to tell you "backyard" mechanics something. Generally, if you've got carb problems with a post-1970 carb or with any four-barrel unit, you're probably better off getting a rebuilt one and installing it rather than fooling with the old carb. It's also illegal for anyone but a certified mechanic to tamper with a newer carb in many cases.

WHEN?

So now you may be wondering just when should you rebuild a carburetor. Well the main candidates for carb rebuilds are older cars with one- and two-barrel carbs. If you're nursing along a car that's logged a lot of miles and is running a bit sick, probably the best investment you can make is a reworked carb—especially if you do the job yourself. Of course you want to be sure the carb is really what's giving you trouble.

If a sick carb is the problem, there's no reason why the average "backyard" mechanic can't pull off an older model one-barrel carb and completely rebuild it. Also, if you have a bit of experience with carbs and/or you work very carefully and follow instructions you should be able to handle a two-barrel carb.

As we mentioned previously, the post-1970 carbs are specially calibrated and equipped for reducing emissions and *should not* be tampered with. However, if you're having carb problems it's not a bad idea to remove the carb and give it a thorough cleaning and check for obvious problems like a punctured float. If the carb still gives you trouble after it is cleaned and properly reinstalled, your best bet is heading for a good mechanic or replacing the carb.

REBUILD

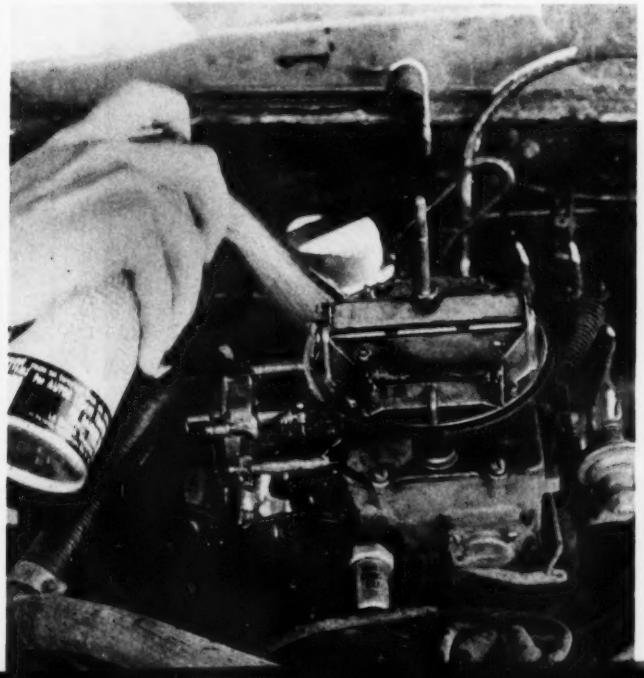
Okay—let's say you have an older carb that's in need of a rebuild. The very first thing you should do is get a manual that outlines the job for your carb step-by-step. If you're not sure of yourself after checking out the procedure, don't do it. Save yourself time and trouble by getting a factory-rebuilt.

If you're confident you can handle the job, you can save a bundle by picking up a carb rebuild kit and doing the overhaul. However, there's a very important difference in the quality of the rebuild kits. The less expensive kits generally contain only a few new internal parts and new gaskets, but worst of all they usually have only sketchy instructions. The way to go is with the more expensive kit that contains all the parts needed to completely overhaul the carb, as well as complete instructions and the ultra-essential gauges for measuring the critical adjustments.

When you're buying a kit you have to be positive you get the correct one,

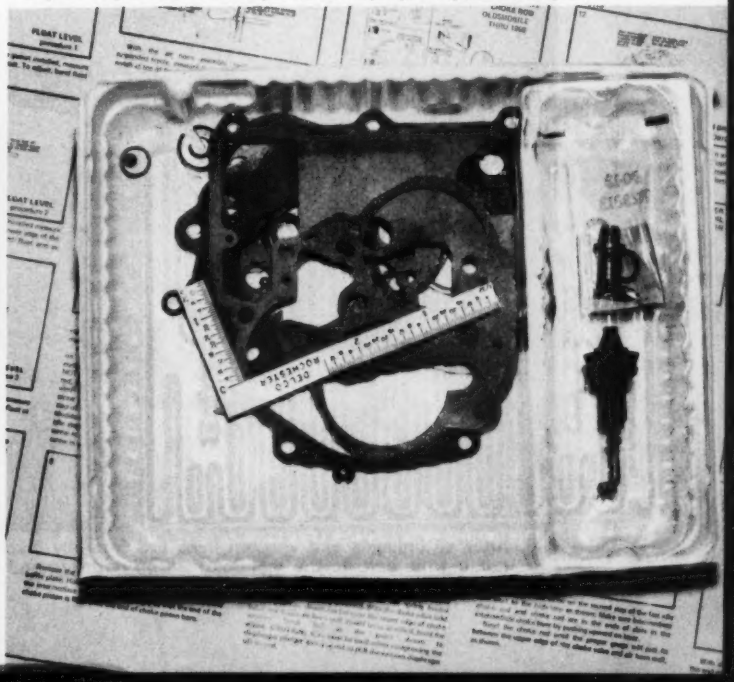
continued

Aerosol carb cleaners can be used to clean the outside of the carb and sprayed down the carb throat to clean the inside.



Be sure to get the best carb rebuild kits that contain all necessary parts, as well as complete instructions and the gauges needed for making the essential adjustments.

**Most rebuild kits are designed for more than one model carb and usually contain more parts—especially gaskets—than are needed to rebuild any one carb. Especially for this reason, save every removed gasket and part so you can be sure you use the proper replacement part.*



since the kits vary for the same carb depending on the specific model. The best way to be sure is to get the number from the carburetor identification tag that's usually mounted on top of the carb. If there isn't a tag, you should be able to find an I.D. number somewhere on the carb.

When you pick up the rebuild kit, grab plenty of carb solvent for soaking the parts clean and you're about ready to go. Remember, never use gasoline for cleaning the carb since it is highly flammable. But also be careful with the carb solvent since it is very caustic and can burn your skin. The best bet is to try to keep the solvent off your hands as much as possible and always rinse the solvent off of your skin after long exposures to the solvent.

Besides common hand tools, the only other items you'll need are some clean rags, clean cans (such as coffee cans) to use for soaking tanks, and finally some sectioned pans—such as TV dinner trays—for organizing parts.

Before beginning to work there are a couple of final points to keep in mind. First, don't forget to remove all jewelry and disconnect the negative battery cable (or positive cable on positive ground systems) to prevent any chance of a burn or explosion from a spark. Finally, to make the job a lot easier, thoroughly clean the outside of the carb with solvent before beginning.

The first step is disconnecting the fuel line, vacuum lines, and the linkages so the carb can be lifted off the manifold—never try to rebuild a carburetor on the engine. The important things are to be sure and use a container or a rag to catch the escaping gasoline when you disconnect the fuel line. Also be sure you know exactly how and where all of the linkages and vacuum lines attach. It's generally a good idea to take some polaroid shots or make some sketches to be sure you know how everything goes back on. You can also label each part as you remove it to help prevent any mixup.

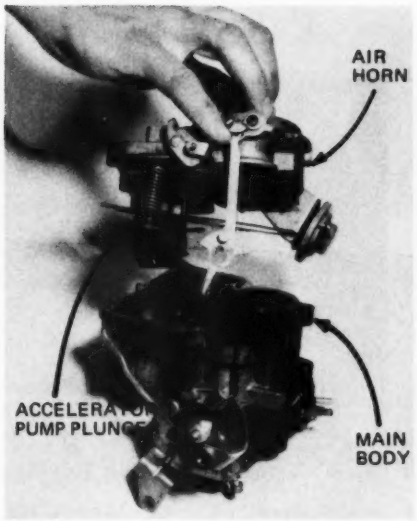
After everything is disconnected from the carb, simply remove the nuts that hold the carb to the manifold and lift the carb off and place it on a clean working surface. Place a wadded-up rag in the manifold opening to prevent any foreign debris from getting inside the engine.

The next thing you want to do is carefully remove the top of the carburetor and remove the float by pulling the pin as shown in the picture. Gently shake the float near your ear—if you hear sloshing the float must be replaced. Plastic floats sometimes get soaked with gasoline and become too heavy. Check float by squeezing it lightly. If the float is okay set it aside and you can go on.

Another important consideration before you continue dismantling the carb are the special spring and ball assemblies that are used as metering systems in most carbs. Note exactly where and how these assemblies fit and be careful not to lose any of these small parts since they are rarely supplied in the rebuild kits. After checking out these special parts, you can continue the disassembly following the step-by-step instructions given with the kit and in a manual.

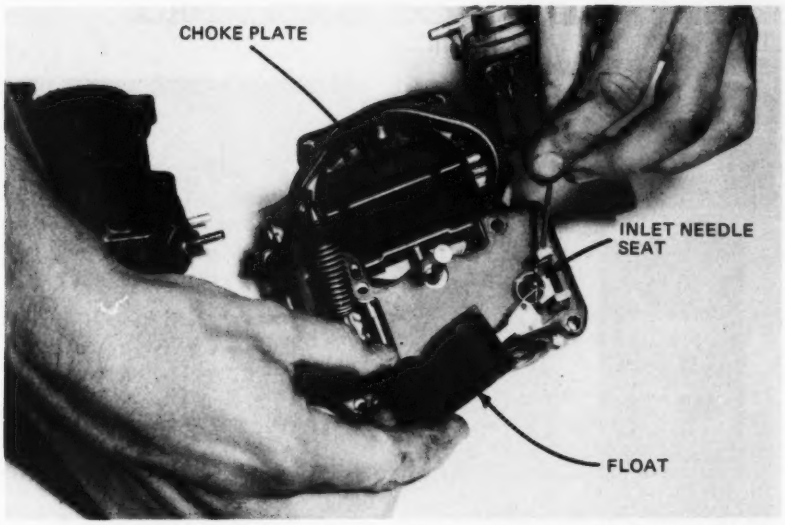
Since the different types and styles of carburetors vary greatly, we can't cover the entire rebuilding process here. However, we will generally outline some of the major steps using pictures of a Rochester two-barrel carb which is a rather common carb that is used on many GM products. Various carb rebuilding tips also accompany the following pics.

After all linkages and vacuum lines are carefully disconnected and marked for easy reassembly, the nuts holding the carb to the manifold can be removed and the carb lifted off the manifold.



The first major step is removing the top of the carb (air horn) from the carb body. There is usually some linkages that must be unhooked to accomplish this. This is the time to locate small parts such as metering valves that can be easily lost.

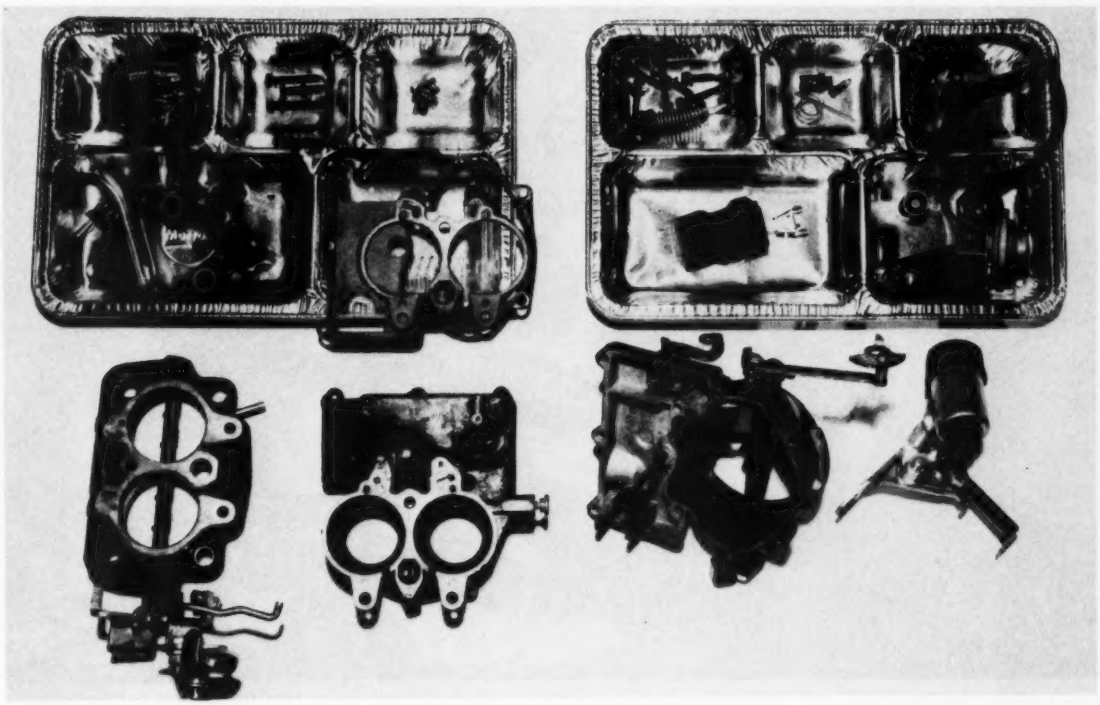
**Don't get carried away when you're disassembling the carb. Follow the instructions step-by-step and don't tear down subassemblies unless specified in the instructions.*



Checking the float is a very important step. Remove it by pulling the retaining pin. Shake the float—if there's gas in it you need a new one. Remove the fuel inlet needle and seat and save them. Remove the accelerator pump and other air horn parts according to instructions.

**The accelerator pump is an important part that shoots gas into the carb under heavy demand. A worn pump is what causes lagging acceleration. Soak the new pump in light oil before installing it to be sure it seats correctly.*

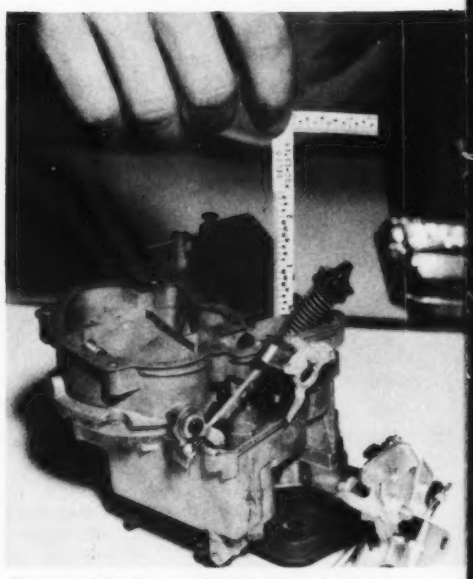
photos continued on next page



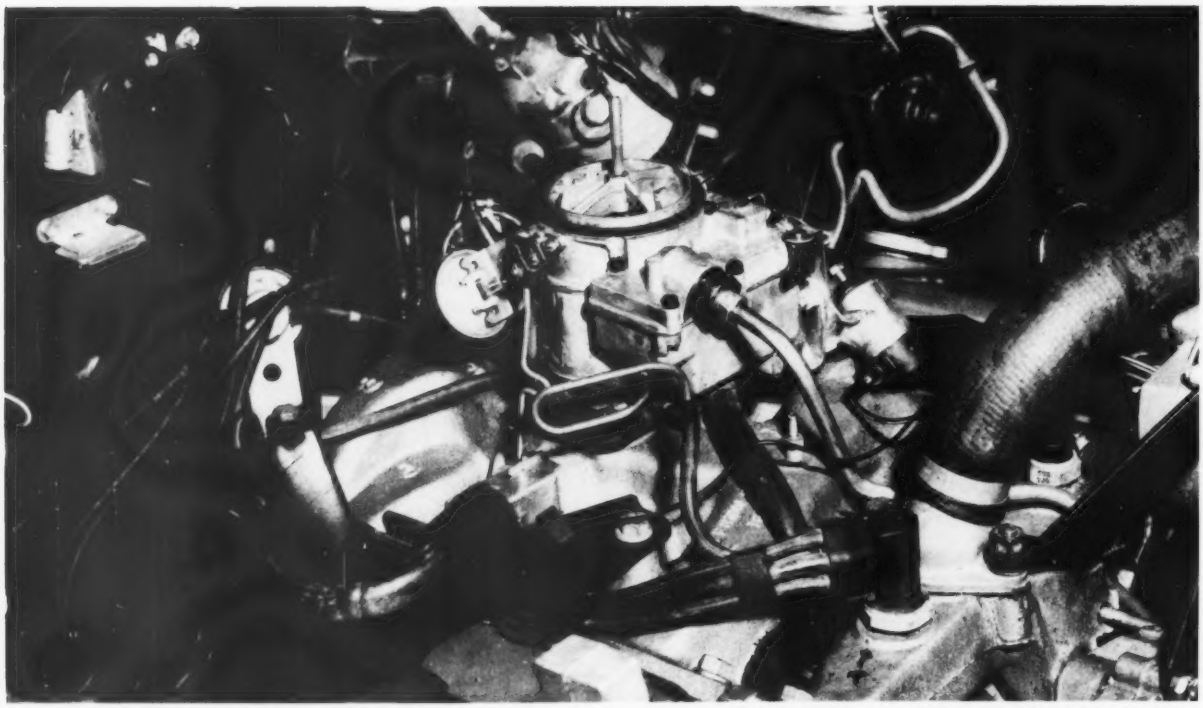
Finish disassembling the carb according to instructions and organize all removed parts and the new parts. As previously mentioned, you may have extra parts in the rebuild kit. This is a good time to match all the new parts with the removed ones and get things organized for the reassembly.

Soak all major parts in carb solvent for at least 30 minutes. Do not place rubber, plastic, or any non-metal parts in solvent —they may disappear. These parts can be washed in solvent and rinsed clean. After all parts have soaked clean, rinse them thoroughly in water and let them air dry.

Here's a good example of why you should save all removed parts. This carb uses two sizes of balls which could be easily mixed. All new parts should be checked carefully against the removed parts before installation.



Reassemble the carb following instructions. Make all adjustments very carefully according to instructions—if you don't, all of your time and trouble has been wasted. Float level is one of the most important settings.



After installing reworked carb and hooking up all vacuum lines and linkages you can fire up the engine and adjust the fuel mixture and idle speed as specified in the manual.

**As soon as you get the engine running right, why not drive to a good shop and get the carb scientifically adjusted right on with the special analyzers? This will insure you're getting the best performance and mileage with the lowest emissions. After all the money you just saved by doing your own carb rebuild you can surely afford it.*

BACKFIRE

TURN INDICATORS

Regarding the August "Pet Peeve" (the driver who engages his directionals when there's another intersection before the one where he intends to turn), there are occasions when it is indeed more reasonable and safe to use turn signals before passing the last intersection or driveway prior to making a turn. One obvious reason is that possible turns are sometimes only tens of feet apart. And in multiple-lane traffic, signaling a reasonable distance ahead of a right turn allows traffic to move to an inner lane and avoid delay or potential rear-enders. In urban conditions where a right turn is coming up and the operator is looking for a nearby address or intersection while proceeding at a slower speed, having the right signal on seems reasonable notice of his intention.

This of course is no defense of the absent-minded driver who drives all day with a signal on or the one who moves into the left lane and slows for his turn miles ahead.

In case you haven't guessed my pet peeve, it's the driver who actuates his signals just prior to making a swing of the wheel, thereby causing a dangerous chain of events to his rear. Incidentally, I consider the distances prescribed by state laws for giving signals to be grossly short and unsafe at speeds above 25 mph. If I have to choose between signals way ahead of a turn or signals on top of a turn, give me the signals NOW.

SSgt Peter S. Nicholas
Det. 055, AFROTC (AU)
UCLA, Los Angeles CA 90024

Address your letters to:
Editor
DRIVER Magazine
AFISC/SEDD
Norton AFB CA 92409

FINAL TUNING

In the August "Backyard Mechanic" there is an error in the instructions for connecting a dwellmeter. In the caption for the first diagram, you state that one lead of the dwellmeter should be connected to the positive coil terminal. This would be true only if the vehicle being tested had a positive ground. (The majority of American cars have negative ground.)

I'm almost sure this was only a printing error because on page 20 you do explain the correct method. However, an inexperienced backyard mechanic might look only at the diagram.

MSgt Horace M. Crawley
HHC HQ Comd
Ft Belvoir VA 22060

Absolutely correct. Changing the word "positive" to "negative" was a typing error and we do detail the correct procedure elsewhere in the article.

continued

continued

BACKFIRE

RUNNING LIGHTS

I read with interest your article on motorcycling, "Getting Into It," in the July issue. However, there is another good way to make oneself more visible on a motorcycle.

Some 1974 model motorcycles, such as the Honda CB 360, now come with running lights in the front to help the auto driver identify the single-headlighted vehicle coming toward him as a motorcycle.

Many pre-1974 motorcycles can be modified to provide running lights for about $4.50.

Essentially the modification requires changing a one-wire light socket to a two-wire socket. I purchased two of the front turn signal/running light sockets for a CB 360 and two two-filament bulbs. There are two wires from each socket. One wire will be a solid color and the other will have a white stripe. After removing the headlight, splice a three or four plug connector onto the white wire leading to the headlight. The wire with the white stripe from each of the new turn signal/running light sockets goes into the new connector. This wires the running light to the low-beam headlight, since the electrical systems of some motorcycles may not be capable of lighting the high beam and all other accessories.

Finally, connect the turn signal wire in the headlight complex to the turn signal wire from the turn signal/running light socket. Put your new two-filament light bulbs into the new sockets and replace the socket in the fittings on the motorcycle, and make sure there are proper grounds.

It is possible to make the same modification to the rear turn signal fixtures. The procedure would be the same as above; however, one may get into the problem of the electrical system capabilities.

A casual investigation indicates that at least all Hondas have the potential for this turn signal/running light arrangement, since the signal fixtures are basically the same.

Capt Joseph L. Parker
Tech Train Ctr/TEOO
Keesler AFB MS 39534

Commercial kits are available to do this, but Capt Parker's method seems just as good and is undoubtedly cheaper.

FREAK SITUATIONS

I enjoy your magazine very much, especially the motorcycle safety articles. They have been a great help with the advice given, but they have never covered freak situations. Maybe this type of thing wouldn't happen again in a hundred years but I think someone's life is well worth a paragraph or two.

Ask your readers to write in and tell of situations they have gotten into and how they coped with them. For example: I was riding through a small town in Tennessee about two years ago, cruising along at 60. I came out of a blind curve at the same speed, only to find a tractor-trailer truck crossing the road. There wasn't enough room to stop in time, so I slowed down as much as possible and laid the bike down. I rolled off and landed in the ditch. The bike slid under the truck and stopped about 40 yards on the other side undamaged. I got a few bruises, but I'm still alive!

Amn William Argo
63SGPM, Environmental Health Service
Norton AFB CA 92409

How about it readers? Let us hear about your "freak" experiences and we'll print the ones that could most benefit others.

TRIBUTE TO SAFETY BELTS

I would like to thank the Air Force deeply for their influential policy concerning the wearing of seat belts.

On Sunday, 4 August, I was involved in an automobile accident and I solemnly believe that belts saved my son's and brother-in-law's lives. I was traveling at 25 mph when the front of my car struck the side of another car. I was totally amazed at how much damage can be done to an automobile at that low a speed.

My brother-in-law told me after the accident that he firmly believes he would have been thrown through the front windshield if he weren't wearing his seat belt. The extent of his physical injury was the tapping of his head on the front dashboard; there were no scars, bumps, or headache. My son, who was strapped in his baby seat, lost a front tooth as his head hit the guard that goes around the seat. I am sure he would have been thrown from the car if he hadn't had a seat belt around him. I suffered absolutely no physical injury.

As I told the investigating officer, my commander, NCOIC, wife, parents, and now you, "Thank God the Air Force influenced me to use seat belts. Without them, I'd have lost my son."

A1C Martin A. Szeliga
Air Weather Service
Scott AFB IL 62226

RESCUE ON THE WATER

Being in the rescue business, I found your article in the July issue on boating very interesting. If more small boat owners would prepare only half as well as your article suggests, we would not have nearly as many search and rescue cases as we do.

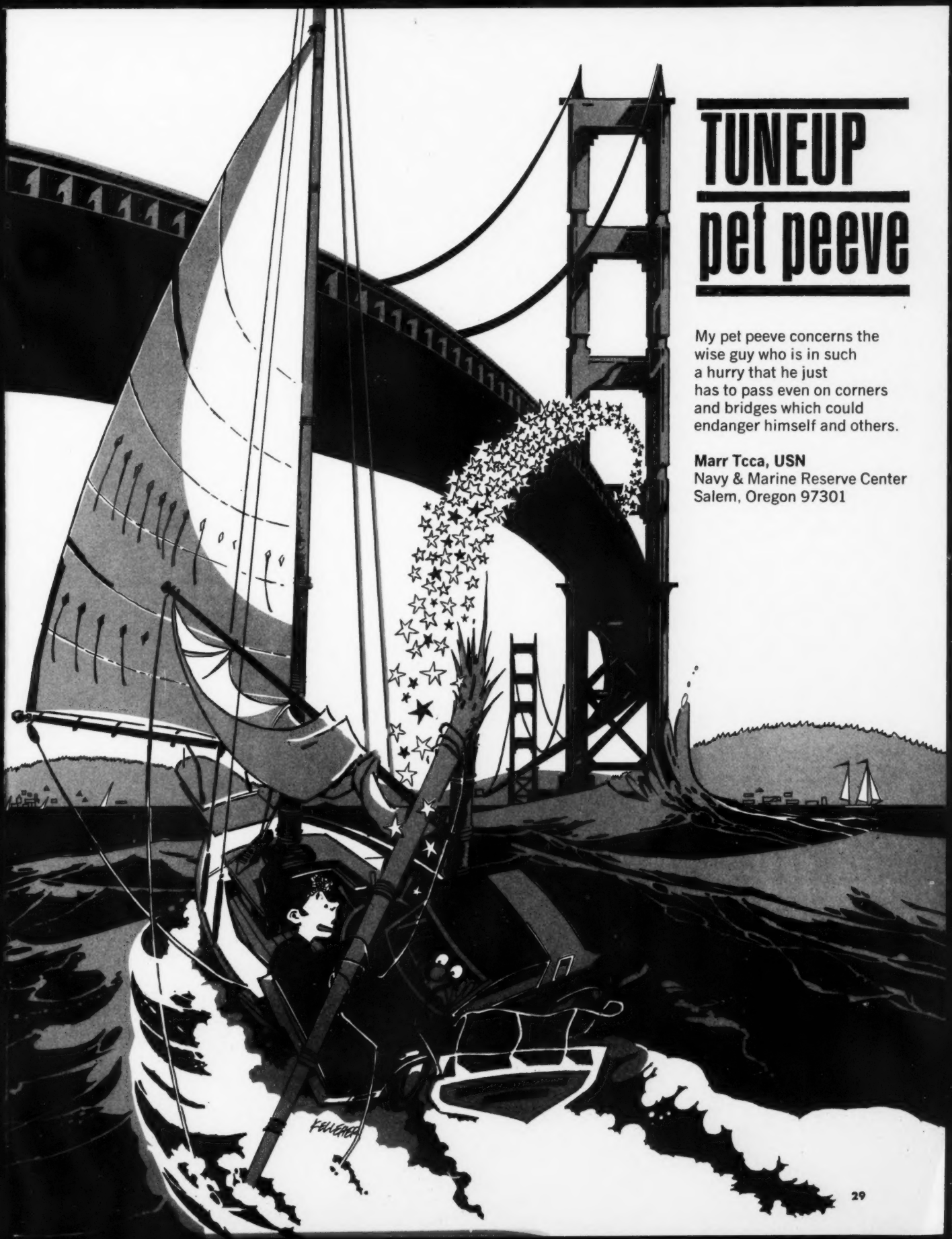
However, I believe you omitted a very important piece of equipment. Among the signaling devices carried on a small boat should be a mirror. Using the sun (8 million candle power) as a source, the reflection from a mirror can be seen up to 40 miles. Even on an overcast day, a mirror is an excellent device to signal aircraft or surface vessels.

Any kind of signaling device can make the difference between being seen or missed during a search. If your boat is disabled, being seen is the key to rescue and maybe survival. So carry the proper equipment for your boat and always carry signaling devices when you go out. You may never need them but if you do you'll have them handy.

Keep up the good work in your fine publication. We here at the Coast Guard Air Station enjoy it very much.

AD2 Gary W. Johnston
USCG Air Station
St. Petersburg FL 33701

☆U.S. GOVERNMENT PRINTING OFFICE: 1974—683-102/3



TUNEUP pet peeve

My pet peeve concerns the wise guy who is in such a hurry that he just has to pass even on corners and bridges which could endanger himself and others.

Marr Tcca, USN
Navy & Marine Reserve Center
Salem, Oregon 97301

Miss DRIVER

Linda Smith

with Larry Randlett

"I've made it a point to learn all about keeping my car in shape. But when I'm planning a long trip I always have a friend help me thoroughly check out the car. When I was 'dry running' a tire change I discovered that my car has one of those crazy uninflated space-saver spares.

"Well, if this type tire is used improperly it can be hazardous. So if you ever use one, follow the instructions very carefully and remember that the space-saver is designed only to get you to the nearest service station. It should never be driven over 30 mph or for more than 300 miles."